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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/697,647

10/31/2003

Muneki Hamashima

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38834

7590

10/19/2004

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EXAMINER

TRAN, THUY V

ART UNIT

PAPER NUMBER

2821

DATE MAILED: 10/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/697,647

Applicant(s)

HAMASHIMA ET AL.

Examiner

Thuy V. Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11 and 12 is/are allowed.
- 6) ☒ Claim(s) 1 and 5-9 is/are rejected.
- 7) ☒ Claim(s) 2-4 and 10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/27/04; 3/9/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

This is a response to the Applicants' filing on 10/31/2003 and preliminary amendment filed concurrently. In virtue of this filing, claims 1-12 are currently presented in the instant application.

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Inventorship

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Drawings Objections

3. The drawings are objected to because of misspelled reference character in Fig. 12 ("annealnig" should be changed to --annealing--).

Appropriate correction is required.

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "accelerator" recited in line 4 of

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claim 1, in line 4 of claim 11, and in line 3 of claim 12 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification Objections

5. The abstract of the disclosure is objected to because it is too long. Correction is required.

See MPEP § 608.01(b).

6. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

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The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

7. A substitute specification including the claims is required pursuant to 37 CFR 1.125(a) because of the existence of numerous broken words therein (i.e. page 4, line 3, "ceramic s", etc.).

A substitute specification must not contain new matter. The substitute specification must be submitted with markings showing all the changes relative to the immediate prior version of the specification of record. The text of any added subject matter must be shown by underlining the added text. The text of any deleted matter must be shown by strike-through except that double brackets placed before and after the deleted characters may be used to show deletion of five or fewer consecutive characters. The text of any deleted subject matter must be shown by being placed within double brackets if strike-through cannot be easily perceived. An accompanying clean version (without markings) and a statement that the substitute specification contains no new matter must also be supplied. Numbering the paragraphs of the specification of record is not considered a change that must be shown.

Claim Objections/ Minor Informalities

8. Claims 1-6, 8, and 11 are objected to because of the following informalities:

Claim 1, line 1, "b am" should be corrected as --beam--; and ";" should be deleted;

Claim 1, line 6, "a" should be deleted;

Claim 2, line 3, "the" should be changed to --a--;

Claim 2, line 5, "the" should be changed to --a--;

Claim 2, line 7, "a" should be changed to --an--;

Claim 3, line 3, "the" should be changed to --a--;

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Claim 3, line 5, “th” should be changed to --a--;

Claim 3, line 6, “wh rein” should be corrected as --wherein--;

Claim 4, line 8, “said second aperture plate” should be changed to --a second aperture of said plate--;

Claim 5, lines 5 and 6, “can be” should be changed to --is--;

Claim 5, line 7, “a” (first occurrence) should be changed to --an--;

Claim 6, line 7, “m chanism” should be changed to --mechanism--;

Claim 6, line 12, “a” should be changed to --an--;

Claim 8, line 4, “the” should be changed to --a--;

Claim 11, line 6, “a” (second occurrence) should be deleted;

Claim 11, line 12, “the” should be deleted;

Claim 11, line 13, “the” (first occurrence) should be deleted; and

Claim 11, line 14, --beams-- should be inserted between “electron” and “.”.

Appropriate correction is required.

9. Claim 10 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. While “A device manufacturing method” is the preamble of the claim, “an electron beam apparatus” which was recited in the previous claim 1 does not constitute any further limitation. Applicants are noted that this claim refers to a method of making the product and that it belongs to a different invention; and therefore, it should not be included in this application.

Claim Rejections - 35 USC § 112

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

11. Claims 5-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claim 5, the recitation "wherein a portion of said Wehnelt member ... orthogonal to one another" in lines 4-7 renders the claim indefinite since it is not clear how the portion of the Wehnelt member can be separated from the rest of the Wehnelt member or itself. Clarification is required.

Claims 6-9 are also rejected under 35 U.S.C. 112, 2nd paragraph, since they are dependent on claim 5.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al. (U.S. Patent No. 6,038,018) in view of Nakasuji (U.S. Patent No. 5,892,224).

With respect to claim 1, Yamazaki et al. discloses, in Fig. 4, an electron beam apparatus comprising (1) an electron gun [1] for directing a plurality of primary beams [31] (see col. 6, line 34) onto a sample [11], (2) an accelerator [15] for accelerating a plurality of secondary electron

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beams emitted from the sample [11], (3) a separator [27] (see col. 8, lines 1-4) for separating the plurality of secondary electron beams [32] from a primary optical system [5, 6], and (4) a director [14] for directing the plurality of secondary electron beams into a secondary optical system [16, 18, 20] for guiding to a detector [22 in 61] outputting a detection signal (which is from 67 to 28) of the secondary electron beams [32]. Yamazaki et al. does not teach a plate which has a plurality of apertures corresponding to the plurality of secondary electron beams in front of the detector.

Nakasuji discloses, in Fig. 1, a plate [10], which has a plurality of apertures [101, 102, 103] corresponding to a plurality of secondary electron beams in front of a detector [M11, M21, M31].

It would have been obvious to one of ordinary skills in the art at the time of the invention to modify the apparatus of Yamazaki et al. by additionally configuring a plate having a plurality of apertures corresponding to the plurality of secondary electron beams and being situated in front of the detector to attract the charged particles or electrons toward the detector and thus to increase the detection efficiency of the secondary electron beams since the arrangement of such a plate for the stated purpose has been well known in the art as evidenced by the teachings of Nakasuji (see Abstract, lines 15-18).

14. Claim 10 is not being provided with either rejection over art or with indicated allowable subject matter since it is not proper.

15. Claims 5-9 are not being provided with either rejection(s) over art or with indicated allowable subject matter since claim 5 is defective.

Allowable Subject Matter

16. Claims 11-12 are allowed.

17. Claims 2-4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

18. The following is a statement of reasons for the indication of allowable subject matter:

Prior art fails to disclose or fairly suggest:

- A electron beam apparatus wherein the plurality of primary electron beams and the plurality of secondary electron beams are arranged in a vicinity of an optical axis, and the plurality of apertures are formed in a shape of an ellipse which is longer in a radial direction, an X-axis direction of XY-coordinates, and/or an Y-axis direction of the XY-coordinates from the optical axis in a plane orthogonal to the optical axis, in combination with the remaining claimed limitations as called for in claim 2;
- An electron beam apparatus further comprising a number of memories twice as much as a number of the detectors for storing digital signals generated by A/D converting the detection signals, and change-over switches disposed in front of and at a back of the memories, in combination with the remaining claimed limitations as called for in claim 3;
- An electron beam apparatus wherein the deflector is controlled to deflect the plurality of secondary electron beams asynchronously with scanning of the plurality of primary electron beams, thereby preventing the plurality of secondary electron beams from moving on a second aperture of the plate in response to the scanning of the plurality

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of primary electron beams, in combination with the remaining claimed limitations as called for in claim 4;

- An electron beam apparatus comprising an EXB separator deposited between objective lens and former stage lens in the primary optical system for separating the secondary electron beams, in combination with the remaining claimed limitations as called for in independent claim 11; and
- An electron beam apparatus wherein a secondary electron image is focused around the separator, in combination with the remaining claimed limitations as called for in independent claim 12.

Citation of relevant prior art

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Prior art Nishimura et al. (U.S. Patent No. 6,765,217) discloses a charged particle beam system.

Prior art Nagai et al. (U.S. Patent No. 6,259,094) discloses an electron beam inspection method and apparatus.

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thuy V. Tran whose telephone number is (571) 272-1828. The examiner can normally be reached on M-F (8:00 AM -5:00 PM).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on (571) 272-1834. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Thuy V. Tran
Primary Examiner
Art Unit 2821

10/18/2004